

1-16-1975

# Test to Determine Kinds of Thinking Processes

University of Dayton

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## Recommended Citation

University of Dayton, "Test to Determine Kinds of Thinking Processes" (1975). *News Releases*. 10312.  
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## university of dayton

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DAYTON, Ohio, January 16, 1975 --- A University of Dayton professor has devised a test to answer the needs created by individualized instruction. His solution is individualized testing.

The test constructed by Dr. William M. Gray, assistant professor of education, is administered like other tests. The difference is that unlike IQ and achievement tests, Dr. Gray's model describes the kinds of thinking processes of which a student is capable, and the kind of which he is not capable.

Other standardized tests reveal where a student falls within a spectrum of other students. "It shows nothing about what a kid can do, about his strengths and how he's organizing his world, how he's looking at it," Dr. Gray says.

Dr. Gray's test shows what logical processes the student is capable of using and the type of thinking in which he can engage. This in turn allows the teacher to tailor the curriculum to fit the student and build on what the student is capable of learning.

The test which has been administered to over 500 students has found to be 95 per cent successful. Its success is measured by random interviews in which the student is asked to reconstruct the thinking process he used to arrive at his answer. "The important factor in this test is not the right answer but the reasoning process the student uses to attain the right answer," the educator says.

In several instances, the interviews have resulted in revision of the tests. For instance, in one question involving a proportion problem, students reported reducing a fraction to one-twenty fifth and asserted that it was 25 per cent of the whole. Perhaps intuitively, some of these same students had marked the correct answer. Nevertheless, the question is in the process of being revised so that it deals only with logical concepts and not mathematical skills. The test attempts to assess abilities and not acquired skills.

With the exception of a fourth grade level ability to read standard English, the test also is free of cultural bias, Dr. Gray believes. Standardized tests have been criticized for using material from the life experiences of the dominant culture and excluding minority groups.

Dr. Gray has conducted his study for the last six years under the auspices of the Biological Sciences Curriculum Study of Denver, Colorado who furnished a grant of \$10,000 and administered the test in classrooms of junior high students throughout the country.

Theoretically, the test should affect classroom instruction. Teachers who cooperated in the project have not yet been told of the test results as the test is still experimental. The one exception is a local school where Dr. Gray's wife, Mary Ann, teaches. "My wife was having trouble teaching certain concepts to some of her students. She checked the test results and altered her presentation which resulted in the students understanding the material," Dr. Gray says, adding with scientific caution, "it may have just been a coincidence."

Dr. Gray presently is in the process of revising the test. He hopes to correlate two separate tests of 15 questions into one model.



A large Peanuts cartoon on the wall of Gray's office showing Lucy exhorting Peanuts to celebrate Piaget's birthday, points to the intellectual debt the UD educator feels he owes to the French psychologist who Dr. Gray describes as "doing for children what Freud did for adult consciousness."

Dr. Gray also is in the process of disseminating the results of his research. He will travel to Los Angeles this month to deliver a paper at the fifth annual seminar on Piaget and the Helping Professions sponsored by the University of Southern California and Children's Hospital.